

Henry III., and adorned with historical paintings, which continued to be used as a council room down to the age of Queen Elizabeth; also many precepts of this king. In one he directs "That a list or border shall be made well painted," with images of our Lord and angels with incense pots scattered over the border; also the four Evangelists. Another leads one to suppose the paintings, ordered to be done in a certain low chamber in the king's garden, were intended to be representations of the siege of Antioch, taken by the Christians in the first crusade, 1098, as a book in French on that subject is ordered by a former mandate to be delivered to Henry, the keeper of the wardrobe, for the Queen's use.

The *Painted Chamber, St. Edward's*, was of great interest, the ceiling flat and curiously designed with scroll-work and the heads of prophets, and the seraphim with seven wings from Isaiah. The walls had been painted with subjects, part of which were battle-pieces taken from the two books of Maccabees; these were certainly as old as 1322, probably older, for in a MS. of Simon Simon and Hugo, the illuminator in the year 1323, existing in the library of Bennett College, Cambridge, this passage occurs: "At the other end of the city (London), is a monastery of black monks, named Westminster, in which all the kings of England lie buried, and immediately joined, is that most famous palace of the king, in which is that well-known chamber on whose walls all the histories of the wars of the whole Bible are painted beyond description, and with most complete and perfect inscriptions in French, to the great admiration of all beholders, and with the greatest regal magnificence." Many other records exist of great interest where the name of Master William, the painter and monk of Westminster and of Florence, is mentioned, and thus we know he was an Italian. Henry III. was a great admirer and encourager of the fine arts, and by the Exchequer mandates we obtain an insight into the nature of the painted decorations in use at this early period, and by the examination of the items in the Exchequer Rolls of Edward I., relative to the first chapel of St. Stephen, such as white-lead, red-lead, vermilion, and azure, gold and silver oils and varnishes, we learn that oil-painting was in use as early as 1292, 150 years prior to its supposed invention by John Van Eyck.

Mr. Crabb proceeded to mention that, in conformity with the ancient custom of attaching a chapel to every residence of importance, the first chapel for the use of the palace of Westminster was founded by King Stephen, A.D. 1150. And upon King Edward III. and his Queen Philippa's return from their conquests in France, they determined to rebuild the chapel with the utmost magnificence, in a style that should surpass whatever had been previously attempted in any land. The principle of design upon which the arrangement and decorations of the chapel were made was explained, with observations upon the richness of dress at the period, and the interest attached to these peculiarly illuminated edifices raised by our ancestors at a time when the arts, struggling for existence, yet appear to have held no inconsiderable power over the warlike taste of the period. Bearing in mind this feeling for magnificent effect, we can entertain with comparative ease the accompanying desire for its extension to their buildings and to their architectural embellishments, by an assimilating sumptuousness of style in coloured decorations, and much more easily understand the plan of the design adopted by our munificent Edward for his chapel royal, produced on the principle that no work of beauty should be "void of signification." The architectural design would thus be formed in conjunction with the sculptured and pictorial embellishments. The chapel consisted of a nave without aisles, the roof rising to a very high pitch; the five windows on each side were remarkably enlarged by deep splayings, thus a strikingly peculiar effect was obtained. The piers narrowed, richly painted, and relieved by gray purbeck marble shafts embellished with thousands of gilt paterae, continued one successive varied, but unbroken, effect of magnificence along the whole side, again carried upwards by the coloured and gilded cornice, and timber roof. In the piers it was purposed to place the statues of our kings from the Norman Conquest down to Ed-

ward III. Upon the walls, under a superb canopy of open tracery and slender clustered columns, were painted figures of angels, each bearing a mantle emblazoned and of different colours, being the armorial bearings of noble contributors, and the holy knights to whose honourable keeping the edifice was particularly intrusted. At the east end, upon each side of the altar, were to be introduced the king and his family kneeling; and upon the walls themselves, together with the windows, were to be depicted the history of the Bible, all the leading events from the Creation to the death of the Apostles. The quarters of the French arms and the English lions were to be freely introduced, as also the fleur-de-lis and French lily, as marks of Edward's supremacy.

Thus the general notion will be understood as one to create an apartment of magnificent size, to adorn it with a picturesque roof, rich architecture elaborately sculptured, and to fill the walls and windows with a connected series of historical paintings of our faith, and the minor portions with single figures, emblazonry, and gilded and painted tracery-work. The habiliments of the priests were also provided of the richest materials, as also others for the court to wear during mass. The paintings were peculiarly treated, and the most careful finish pervaded the whole.

The chapel was suppressed, and its wealth transferred by Henry VIII. The lecturer traced it down to the period of 1800, giving the authorities upon which his descriptions were founded, and quoting the existing Exchequer Rolls relating to its first erection and subsequent repairs by different kings. And he concluded by saying, "That magnificent example of Italian ecclesiastical decorative art I recently had the pleasure of bringing before you should not be forgotten on the present occasion. The rebuilding of St. Stephen's resulted from a vow made by Edward and his Queen during the French wars, and was finished in eighteen years, A.D. 1318. The *Certosa of Pavia*, whose sumptuous decorations were continued with equal taste and spirit and expense during three centuries, and form a perfect chain and example of the fine arts in Lombardy, was commenced A.D. 1396; and arose from the fruits of repentance in one of the noble house of Visconti, who had murdered his uncle and his family. In atonement for this guilt, and in expiation of his crimes, Visconti, in dedication to the Queen of Heaven, laid the foundation of a mass of edifices, destined to become a glorious monument of perfection in every branch of the fine arts. Those who are disposed to pursue for themselves the gratifying inquiries which my limited leisure only allows me to hint at, will discover the close connection of the fundamental principles of design exhibited in each building for its peculiar purpose. The chapel of St. Stephen, intended for a sumptuous temple fit for princes to worship in, was a single space uninterrupted by pillars, of rich and elegant Gothic architecture, every ingenuity being used to increase richness by the aid of an unusual breadth of light gilding and colour. Its roof, pavement, walls, and windows combined in solemn history with the richest habiliments to produce an apartment suitable for the chapel of a royal palace, and justly rendered it the most magnificent the arts of the era could produce.

The church of the *Certosa* was later. Art was then advancing with giant strides towards the creation of names yet continuing to shed an undiminished lustre over the country. This building was for a different purpose. The interior, with all its profusion of rich expenditure, was to prepossess the spectator with solemn grandeur, its massive columns, widespread arches, subdued light, quietly illuminating the lengthy vista of marble walls, and rendering dimly visible the sparkling of gilded stars, from its deep azure-coloured vaults, all tending, as a portion of the design, to produce the impression of indefinite space. Grandeur and rich harmony which tends, through the power of effect, to soothe those turbulent and stormy passions of man's mind, which yields to the subduing tones of music and of colour, were produced.

It may not be exactly within my province to notice, but there does appear something greatly to be admired in the idea, of a temple of worship exhibiting the perfect production of every ingenious art which the bounty of the Creator has pleased to bestow upon man. A

religion thus exhibiting in its churches a combination of studied magnificent effects as a whole, and an endless application of the highest excellences in the details, must be allowed to speak an intelligent language plainly indicative to the general people of that perfection required in the worshipper. Let no labour or expense be thought too great which will contribute to the honour and embellishment of the House of Prayer, was the precept of those men whose works we have this evening been considering."

On Wednesday next (the 12th), a paper on the Interior Decorations of the Royal Exchange will be read.

INSTITUTION OF CIVIL ENGINEERS.

FIG. 25.—The President, Sir John Rennie, in the chair.

The paper by Mr. P. W. Barlow "On the comparative advantages of the Atmospheric system of propulsion on Railways," was the result of an examination of the system, with a view of determining as to the propriety of adopting it on the Tounbridge Wells branch of the South-eastern Railway.

The author first examined the comparative advantages of the atmospheric system over that of traction by a rope, and then he stated the reason for supposing it to be inferior to the locomotive system. He premised that on lines similar to the Greenwich and Blackwall, where the traffic was nearly uniform, and at short intervals, the power used admitted of mathematical computation; but that on railways generally, the power required must be irregular, both as to the amount required and the duration of its employment, and that therefore a power which was restricted to carrying between certain given points only and certain intervals, would lead to great inconvenience in practice. It would be inconvenient also to have a power which could not be employed for the ordinary repairs of the road, ballasting, removing slips, conveying building materials, working the coal and lime traffic at sidings, moving goods, trucks, carriages, &c. at the stations, all of which was done at present by the locomotives with a great saving of time, and of the expense of men and horses. If locomotives were employed for these purposes only, it must be at a great expense, as the keeping up a small locomotive establishment was very costly, and moreover, the gradients and curves of the line must be adapted for working locomotives, and thus do away with one of the great arguments in favour of the atmospheric system.

It was contended that the subsidence of embankments, which at present constantly occurs without interrupting the usual traffic or being perceived by the passengers, would suffice to rupture the air-pipe, or strain it in such a manner that the valve would not close, and thus cause a stoppage of the line. Many other and similar practical objections were stated against the system, but the main point was in the comparative cost of haulage when examined with stationary and with the locomotive engines. With the former it was contended that on lines with unfrequent trains the small portion of time the power was actually employed and the number of hours for which the steam must be kept up in order to be always ready, would be so disproportionate as to make the stationary engine system far more expensive than locomotive power. The lines with very steep gradients were of course excluded from this position. It was considered also that with the atmospheric system, steep gradients increased the expense of power in the same ratio, as the power must always be exerted in whatever way it was applied.

Several experiments were then given to show the great expense of fuel per ton of goods on the Atmospheric Railway; the results were decidedly in favour of the locomotive. The cost of construction was then examined, and it appeared, that referring to the calculation of the cost of working the London and Birmingham line, to lay down the atmospheric apparatus of a double line with a pipe of the required area would not be less than 10,000*l.* per mile or a total cost of 1,120,000*l.* the interest of which sum at 5 per cent. would be 56,000*l.* or 50*l.* per mile, which sum nearly equalled the average cost of working the line by locomotives, and was greater than on many lines.

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